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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/784,569
Filing Date: February 23, 2004
Appellant(s): ARUN, UMA

Frank C. Nicholas
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/21/06 appealing from the Office action mailed 3/23/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns in view of Schubert, US Patent 6,898,501. Cairns discloses a method and apparatus of tuning a hands-free system comprising hands-free adapter 30, noise reduction control device 40, microphone array 14 and mobile unit 20. As shown in figure 3, vehicle conditions and detected and noise parameters based on vehicle conditions are used to modify a noise reduction algorithm. Cairns does not disclose that the vehicle condition inputs include at least one road input based on global position coordinates. Schubert disclose a vibration reduction system for a vehicle comprising controller 200, vehicle control system 250 which has a positioning control system 256. Vehicle inputs such as tool usage, steering, speed, etc. are used by the controller to accomplish vibration control. Positioning control system 256 comprises positioning control circuit 300 which is coupled to GPS system 328. The global position coordinates along with geographical information from map 350 is used to generate a road input (bumpiness). As taught in column 18 lines 32-37, the vibration control system (ACS 26) changes its algorithm based on the level of bumpiness (which is a physical and mechanical condition of a vehicle). Thus, Schubert discloses receiving at least one road input based on global position coordinates. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the global positioning system and geographical information map taught by Schubert in the invention of Cairns for the purpose of improving the performance of the noise reduction control

device 40 since it was suggested to use vehicle conditions which relate to its physical and mechanical condition. Claim 21 is met. As to claim 26, obviously a change in global coordinates which results in a road type (bumpiness) change (determined by geographical information map 350), would adjust the noise suppression algorithm appropriately.

Claims 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns in view of Schubert as applied to claim 21 above, and further in view of Venkatesh et al, US Patent 6,674,865. The combination of Cairns and Schubert does not disclose that the vehicle condition inputs includes an external vehicle climate input based on weather outside the vehicle. Venkatesh discloses a volume control system. In column 2 lines 15-27, it was suggested that noise reduction using a filter in a vehicle depends on road surface and weather. Therefore Venkatesh discloses a vehicle input for a noise reduction algorithm can be based on an external vehicle climate input. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Cairns and Schubert by implementing an external climate condition input which is based on weather outside of the vehicle (as taught by Venkatesh) as a vehicle input to the noise reduction control device 40 for the purpose of further improving the noise reduction capabilities of the hands-free unit. One would have been motivated to use external climate since it relates to a physical condition of the vehicle.

Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stankewitz, US Patent Application Publication 2004/0142672 in view of Schubert. In the figure, Stankewitz discloses a method for suppressing noise for a hands-free phone in a motor vehicle comprising receiving a plurality of vehicle conditions via a communication bus (step 11), creating a noise parameter based on the conditions (step 12) and adjusting a noise suppression

algorithm based on the noise parameter (step 14). Stankewitz does not disclose that the vehicle condition inputs include at least one road input based on global position coordinates. Schubert disclose a vibration reduction system for a vehicle comprising controller 200, vehicle control system 250 which has a positioning control system 256. Vehicle inputs such as tool usage, steering, speed, etc. are used by the controller to accomplish vibration control. Positioning control system 256 comprises positioning control circuit 300 which is coupled to GPS system 328. The global position coordinates along with geographical information from map 350 is used to generate a road input (bumpiness). As taught in column 18 lines 32-37, the vibration control system (ACS 26) changes its algorithm based on the level of bumpiness (which is a physical and mechanical condition of a vehicle). Thus, Schubert discloses receiving at least one road input based on global position coordinates. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the global positioning system and geographical information map taught by Schubert in the invention of Stankewitz for the purpose of improving the performance of the noise suppression. Claim 21 is met. As to claim 26, obviously a change in global coordinates which results in a road type (bumpiness) change (determined by geographical information map 350), would adjust the noise suppression algorithm appropriately.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stankewitz in view of Schubert as applied to claim 21 above, and further in view of Tomisawa et al, US Patent 5,850,458. The combination of Stankewitz and Schubert does not disclose an audio-device input based on the type and intensity of the ambient noise as a vehicle condition input. In figure 7, Tomisawa et al disclose a method of noise suppression in a vehicle comprising microphone 46, air flow meter 10, crank angle sensor 11, throttle sensor 12, and temperature sensor 13, the

meter, and sensors representing vehicle condition inputs. The CPU 9 computes a control signal for output through speaker 45 for controlling the noise level in the vehicle. Thus, Tomisawa teaches using an audio device input (microphone 46) along with other vehicle condition inputs for controlling noise. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Stankewitz and Schubert per the teachings of Tomisawa and include a microphone for receiving the ambient noise level for the purpose of improving the noise suppression algorithm's capabilities.

Claims 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stankewitz in view of Schubert as applied to claim 21 above, and further in view of Venkatesh et al. The combination of Stankewitz and Schubert does not disclose that the vehicle condition inputs includes an external vehicle climate input based on weather outside the vehicle. Venkatesh discloses a volume control system. In column 2 lines 15-27, it was suggested that noise reduction using a filter in a vehicle depends on road surface and weather. Therefore Venkatesh discloses a vehicle input for a noise reduction algorithm can be based on an external vehicle climate input. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Stankewitz and Schubert by implementing an external climate condition input which is based on weather outside of the vehicle (as taught by Venkatesh) as a vehicle input to the noise suppression algorithm for the purpose of further improving the noise reduction capabilities of the hands-free unit. One would have been motivated to use external climate since it is a vehicle parameter.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns in view of Schubert as applied to claim 21 above, and further in view of Grivas et al, US Patent Application

Publication 2005/0130723. The combination of Cairns and Schubert does not disclose receiving the road input from a call center using a wireless carrier system. Grivas et al discloses a hands-free telephone system in vehicle 209 utilizing telematics unit 208 which communicates with communications node 204 via wireless carrier. The telematics unit 208 is coupled to telematics functionality module 250 which is coupled to a hands-free module 275, noise cancellation module 276 and other applications. A global positioning system (GPS) is integrated in the system. The telematics unit communicates with a call center (see paragraph 34). Examiner takes Official Notice that telematics units transmitted and received information from call centers for the purpose of controlling vehicle operations such as door unlocking, remote access and starting. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a call center to transmit a road input based on GPS in the combination of Cairns and Schubert, for the purpose of modifying the noise suppression algorithm in a vehicle using telematics.

Claims 28, 30-33, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns in view of Schubert and further in view of Grivas et al. Cairns discloses a method and apparatus of tuning a hands-free system comprising hands-free adapter 30, noise reduction control device 40, microphone array 14 and mobile unit 20. As shown in figure 3, vehicle conditions and detected and noise parameters based on vehicle conditions are used to modify a noise reduction algorithm. Therefore Cairns discloses adjusting a noise parameter for a hands-free system. Cairns does not disclose adjusting the noise parameter based on a received road input. Schubert disclose a vibration reduction system for a vehicle comprising controller 200, vehicle control system 250 which has a positioning control system 256. Vehicle inputs such as

tool usage, steering, speed, etc. are used by the controller to accomplish vibration control. Positioning control system 256 comprises positioning control circuit 300 which is coupled to GPS system 328. The global position coordinates along with geographical information from map 350 is used to generate a road input (bumpiness). As taught in column 18 lines 32-37, the vibration control system (ACS 26) changes its algorithm based on the level of bumpiness (which is a physical and mechanical condition of a vehicle). Thus, Schubert discloses adjusting a noise parameter based on a received road input and determining if the vehicle has moved onto a new road based on a GPS location. As stated above, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the global positioning system and geographical information map taught by Schubert in the invention of Cairns for the purpose of improving the performance of the noise reduction control device 40 by adjusting the noise suppression algorithm based on a road input. The combination of Cairns and Schubert does not disclose that the road input is received from a call center. . Grivas et al discloses a hands-free telephone system in vehicle 209 utilizing telematics unit 208 which communicates with communications node 204 via wireless carrier. The telematics unit 208 is coupled to telematics functionality module 250 which is coupled to a hands-free module 275, noise cancellation module 276 and other applications. A global positioning system (GPS) is integrated in the system. The telematics unit communicates with a call center (see paragraph 34). Examiner takes Official Notice that telematics units transmitted and received information from call centers for the purpose of controlling vehicle operations such as door unlocking, remote access and starting. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a call center to transmit a road input based on GPS in the combination of Cairns and

Schubert, for the purpose of modifying the noise suppression algorithm in a vehicle using telematics. Claims 28, 30, 33, 35, and 36 are met. As to claims 31 and 32, Grivas discloses a GPS location system in the vehicle and it was obvious to use a call center to determine a road input based on a received GPS location and database and send that road input to the mobile vehicle for noise suppression.

Claims 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns in view of Schubert and further in view of Grivas as applied to claims 28 and 33 above, and further in view of Venkatesh et al. The combination of Cairns, Schubert, and Grivas does not disclose that the noise suppression algorithm is adjusted in response to an external vehicle climate input. Venkatesh discloses a volume control system. In column 2 lines 15-27, it was suggested that noise reduction using a filter in a vehicle depends on road surface and weather. Therefore Venkatesh discloses a vehicle input for a noise reduction algorithm can be based on an external vehicle climate input. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination of Cairns, Schubert, and Grivas by implementing an external climate condition input which is based on weather outside of the vehicle (as taught by Venkatesh) as a vehicle input to the noise reduction control device 40 for the purpose of further improving the noise reduction capabilities of the hands-free unit. One would have been motivated to use external climate since it relates to a physical condition of the vehicle.

(10) Response to Argument

Appellant initially traverses the rejection of claims 21 and 26 as unpatentable over the combination of Cairns in view of Schubert. Appellant argues that there was no motivation to

combine the references and that all the claim limitations were not taught by the combination. Examiner disagrees with the arguments. Page 10, second paragraph, of the Appeal Brief states that Schubert does not disclose "at least one road input is based on global positioning coordinates." Such an assertion is specious, at best. Attention is drawn to figures 11 and 12 of Schubert. Figure 11 discloses a positioning control system, which comprises a GPS receiver 330 and GPS antenna 332 and positioning control circuit 300, as shown in figure 12. Column 18 lines 32-37 discloses that the positioning control circuit 300 uses the global position of the vehicle and a reference map 350 (shown in figure 13) to estimate the bumpiness level of a road and adjust performance parameters of the active cab suspension system (ACS) 26. The ACS 26 is used to reduce the vibrations (which are noise) of the vehicle. See column 7 lines 1-17 of the Schubert reference. There exists no rational reason why the bumpiness level taught by Schubert does not read upon "a road input", as argued by Appellant. Column 18 line 25 specifically states "road 352" and associates a bumpiness level with said road. Furthermore, Appellant does not explicitly state the definition of a road input in the specification. Thus, a reasonable broad interpretation of a "road input" includes any characteristics associated with a road, including bumpiness. Appellant also argues that Cairns teaches away from the combination because the reference allegedly excludes characteristics not related to the physical mechanical/electrical condition of the vehicle. Examiner reminds the Appellant of the response to such argument detailed in Final Office action and will reiterate it. Cairns only teaches away from one feature – measuring the ambient noise level for determining the values of a noise reduction algorithm. The reference suggests the use of any vehicle conditions that indirectly help predict a noise field within the vehicle. A road input, such as bumpiness, relates to the mechanical condition of a

vehicle just as its speed relates to the mechanical condition of a vehicle. Both variables predict noise within the vehicle, as the faster a vehicle travels, the higher the noise level, and likewise, the bumpier the road, the higher the noise level. The bumpiness of a road does relate to the condition of the vehicle as it directly affects the vehicle. With regard to claim 26, Appellant argues that Examiner has used impermissible hindsight in stating that a change in global positioning coordinates results in a road type (bumpiness) change which would adjust the noise suppression algorithm appropriately. Such an argument is concocted in view of the fact that Schubert explicitly teaches that the parameters of its vibration control system (ACS 26) accommodate changes in the level of bumpiness. It was proper to combine Cairns and Schubert since Cairns suggested the use of any vehicle condition that indirectly predicts noise and the combination taught changing the algorithm according to a change in road input.

Section "B" on pages 11 and 12 of the Appeal Brief details the arguments relating to the combination of Cairns, Schubert, and Venkatesh et al to reject claims 23 and 27. As stated above, there was motivation to combine Cairns and Schubert. Appellant further argues that an external vehicle climate does not relate to the physical condition of the vehicle, therefore Cairns cannot be combined with Venkatesh, which disclosed that noise reduction is based on external weather. Examiner respectively disagrees. Rainy weather is naturally noisier than sunny weather. The rain hitting a vehicle indirectly predicts noise inside a vehicle. Therefore, the external vehicle climate relates to the physical condition of a vehicle and it was proper to combine the references.

Appellant contends that the combination of Stankewitz and Schubert in rejecting claims 21 and 26 under 35 U.S.C. 103(a) was improper on pages 12-14 of the Appeal Brief. Appellant

alleges that there was no motivation to combine the references. Examiner disagrees and points to paragraph 12 of Stankewitz which suggests the use of vehicle parameters for noise suppression. There are no vehicle parameters which are excluded. The examples of vehicle parameters listed relate to parameters which indirectly predict noise inside a vehicle. One of ordinary skill in the art would have realized that a road input, such as bumpiness, based on GPS coordinates (which indirectly measures noise) would have qualified as a vehicle parameter that could be used in the Stankewich apparatus. Therefore it was proper to combine Stankewitz and Schubert, which taught the use of a road input. The second full paragraph on page 13 of the Appeal Brief argues that Stankewitz taught away from a combination with Schubert because the reference teaches the need to create an optimum call condition without necessitating technological or computational expenses. Appellant alleges that Schubert would destroy the operation of Stankewitz because it requires a major technological and computational expense, specifically the use of GPS. Examiner contends that the Appellant has mischaracterized the reference. The computations discussed by Stankewitz refer to the calculation of noise suppression values after vehicle operating parameters (vehicle conditions) are determined. The computations are not excessive because noise suppression values are stored in a table. Therefore, modifying Stankewitz to include road inputs based on global positioning coordinates does not increase computations, since a table is used once vehicle conditions are established. The Stankewitz reference actually teaches away from doing vast amounts of calculations to establish noise suppression values. The combination of Stankewitz and Schubert uses tables to accomplish noise suppression and would not require intense calculations. On page 14, Appellant argues that there would be no reasonable expectation of success also based on the idea that Schubert increases technological and

computational expense and increase the time for creating optimum call conditions. Examiner maintains that the time period to retrieve road inputs is not substantially longer than the time period to receive window position information and one of ordinary skill in the art would nevertheless expect successful noise reduction.

Examiner maintains the same argument with regard to claim 24 which required an audio device input based on the type and intensity level of ambient noise. In section D, page 15 of the Appeal Brief, Appellant argues that the Stankewitz teaches away from the combination with Schubert and Tomisawa because it would necessitate a major technological or computational expense, specifically providing a GPS unit, a sound wave generator (which is found in Tomisawa) and means to calculate a phase shifted signal from the sound wave generator would defeat the purpose of Stankewitz. However, as stated above, a GPS unit in the context of generating vehicle conditions for a noise suppression algorithm does not necessitate computational expense in terms of calculating a noise suppression value since tables are used. Furthermore, microphones in noise suppression applications are very economical and phase shifting does not require much calculation. Thus, the rejection is proper.

The combination of Stankewitz with Schubert and Venkatesh similarly is proper. Contrary to Appellant arguments that Stankewitz teaches away from Venkatesh in regard to claims 23 and 27, Stankewitz only teaches away from using a learning phase for noise suppression (see paragraph 3). Therefore with reasonable motivation, one of ordinary skill in the art would have realized external vehicle climate as a vehicle condition for noise suppression. Venkatesh is only used for the teaching of using an external vehicle climate condition for a noise suppression algorithm – the reference to echo cancellers, gain control signals based on vehicle

speed, and controlling gains of a dither signal mentioned by the Appellant in his argument is irrelevant.

Appellant offers no arguments to claim 25 other than it depends from claim 21 and is therefore allowable. As a result, the Official Notice taken by Examiner is regarded as accepted. The rejection is maintained by Examiner.

The combination of Cairns, Schubert, and Grivas was used to reject claims 28, 30-33, 35, and 36, of which is traversed by Appellant. In second full paragraph of section G, page 17, arguments are presented which are similar to those traversing the rejection of claims 21 and 26. Specifically, it is argued that Cairns teaches away from the combination because the term vehicle conditions excludes characteristics not related to the physical mechanical/electrical condition of the vehicle. That statement was addressed above and is repeated in short – Cairns suggests the use of any vehicle condition with the exception of using a microphone to measure ambient noise level. Appellant also presents the confusing argument that an external vehicle climate is not a condition of the vehicle. Examiner is unsure of the nature of such an argument since the claims rejected by the combination do not recite that feature. Since it is the Examiner's contention that Cairns does not teach away from the combination, the rejection is maintained.

Appellant traverses the Examiner's statement of the rejected claims in the third full paragraph of section G. Appellant is reminded that the issue with the statement was previously addressed in the Final Rejection on 3/23/06, page 3 last paragraph, however Examiner will once again clarify the statement. The statement that "claims 28, 30, 33, 25, and 36 are met" indicates that the limitations in those claims are met by the rejection laid forth, in this case, the combination of Cairns, Schubert, and Grivas. To enable Appellant to better understand what the

statement is alleging, the statement is intended to mean that the claims are rejected. Such a rejection is founded in law, specifically 35 U.S.C. 103(a). With regard to the idea that any rejections should be articulated clearly and early in the examination process, the rejection of the claims using the combination of Cairns, Schubert, and Grivas was presented twice and at length. An artisan is able to understand that the limitations in the claims are found in the references. It is also the Examiner's contention that the obvious statement traversed by Appellant in the last paragraph on page 17 of the Appeal Brief is not based on impermissible hindsight, but rather is the result of a modified Cairns apparatus.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Brian Tyrone Pendleton

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